

CLAIMS

1. A seat belt system for use by an occupant of a vehicle seat, the seat belt system comprising:

5 seat belt webbing including a solid material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal.

2. The seat belt system of claim 1, further comprising:

a controller configured to selectively cause the generation of the activation signal to which the material is responsive; and

5 at least one sensor configured to transmit sensor signals to the controller; wherein the controller is configured such that the size of the webbing is dependent on the sensor signals.

3. The seat belt system of claim 2, wherein the controller is configured to process the sensor signals to determine if at least one predetermined condition exists, and to cause the generation of the activation signal when the controller determines that said at least one predetermined condition exists.

4. The seat belt system of claim 2, wherein said at least one sensor is configured to transmit sensor signals indicative of the size of the occupant to the controller, and wherein the controller is configured so that the rate at which the shape or dimensional change is effected is dependent on the sensor signals indicative of the size of 5 the occupant.

5. The seat belt system of claim 1, wherein the webbing includes a tapered portion having a wide end and a narrow end.

6. The seat belt system of claim 5, wherein the material is in the form of a plurality of ribs spaced a distance apart from one another, and wherein the distance between each of the ribs is greater at the wide end of the tapered portion than at the narrow end of the tapered portion.

7. The seat belt system of claim 1, wherein the webbing includes a first segment and a second segment, wherein the first segment and the second segment are tapered to each have a wide end and a narrow end, and further comprising a buckle connected to the narrow end of the first segment and a tongue member releasably engageable with the buckle and connected to the narrow end of the second segment.

8. The seat belt system of claim 1, wherein the material is a shape memory material.

9. The seat belt system of claim 1, wherein the material is a polymer characterized by a reversible length change when subjected to chemical or electrical stimulus.

10. A seat belt system for a vehicle comprising:

a vehicle seat occupiable by an occupant having a pelvis and a neck;
5 seat belt webbing having a plurality of ribs that are selectively expandable in response to an activation signal to effect a shape or dimensional change in the webbing;

10 wherein the seat belt webbing is mounted with respect to a seatback portion of the seat so that the seat belt webbing is positionable across the occupant between the neck and the pelvis; and

wherein the seat belt webbing is characterized by the absence of an over-the-shoulder portion.

11. The seat belt system of claim 10, wherein the seat belt webbing includes a tapered portion having a wide end and a narrow end.

12. The seat belt system of claim 11, wherein the distance between each of the ribs is greater at the wide end of the tapered portion than at the narrow end of the tapered portion.

13. The seat belt system of claim 12, wherein the webbing includes a first segment and a second segment, wherein the first segment and the second segment are tapered to each have a wide end and a narrow end, and further comprising a buckle connected to the narrow end of the first segment and a tongue member releasably engageable with a buckle and connected to the narrow end of the second segment.

14. The seat belt system of claim 10, wherein the ribs comprise solid material that is responsive to the activation signals.

15. A method for controlling the size or shape of seat belt webbing, the method comprising:

monitoring a state or condition; and

5 causing the seat belt webbing to effect a dimensional or shape change in response to a change in the monitored state or condition.

16. A seat belt system for an occupant of a vehicle, the seat belt system comprising:

5 seat belt webbing including a contractile polymer that is sufficiently configured to contract in response to a force exerted by the occupant on the seat belt webbing.

17. A seat belt system for use by an occupant of a vehicle seat, the seat belt system comprising:

5 a vehicle seat occupiable by an occupant having a pelvis and a neck;
seat belt webbing comprising a solid material that is responsive to an activation signal to effect a shape or dimensional change in the seat belt webbing;

10 wherein the seat belt webbing is mounted with respect to a seatback portion of the seat so that the seat belt webbing is positionable across the occupant between the neck and the pelvis; and

wherein the seat belt webbing is characterized by the absence of an over-the-shoulder portion.